

COMPACT DISC HOLDER AND ITS SUPPORT BASE

BACKGROUND OF THE INVENTION

The present invention relates to a compact disc holder and its support base that make a better capability to store a compact disc.

Conventionally, a compact disc container is suggested which is contained plural compact discs to watch easy. For example, Japanese laid-open utility model publication number 5-71191 discloses a structure of storing cases that connect plural by connection of projection, in which stores pivot able arm on which puts the compact disc. In addition, Japanese utility model publication number 6- 43028 discloses a structure of compact disc holders that are connected the plural number of by connecting material which puts the compact disc on it.

However, the disclosed structure in laid-open utility model publication number 5-71191 is hard to look for a specific thing because compact discs are stood in line at short distance. And, the disclosed structure in utility model publication number 6-43028 is inconvenience forced to useless operation to open the whole. Furthermore, the disclosed compact disc holder in these technologies, because of necessity of members of materials that put on a compact disc every one piece or of a containing case, must become a large scale container to receive them, and a large installation space is necessary, and there is the inconvenience that a cost becomes a large amount of.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a compact disc

holder that has a simple structure and a high serviceability and saves the installation space and has an excellent economy.

Initially, a compact disc holder of the present invention comprising a holding part which is made from magnet member which inserts through a central hole of a compact disc directly or indirectly with cover, and a side wall member which supports a compact disc side, and the side wall member constitutes magnetic attraction ability to adsorb to a ferromagnetic article by central part of the outside of the backside of an aspect to face with a compact disc in this side wall member, and there is characteristic by letting the tip face of said holding part adsorbs to a ferromagnetic article by magnetic attraction and holds a compact disc. According to this constitution, the compact disc holder has very simple structure to be able to hold a compact disc even if there is ferromagnetic material.

A compact disc holder of the second embodiment of the present invention each said holding part and said side wall member which covers one side central part in a compact disc are formed to one body, and a top part of the holding part and a outside face of said side wall member are made from magnet member to a different magnetic pole. According to this constitution, the compact disc holder can use by existing of other ferromagnetic material by magnetic attraction to outside surface of the sidewall member.

A compact disc holder of the third embodiment of the present invention a compact disc holder has a wall member of the ferromagnetic material, which covered the central part of other side of compact disc. According to this constitution, the compact disc holder can hold the compact disc by the central part side of it in the state that overturned between a magnet member

and ferromagnetic member.

A compact disc holder of the fourth embodiment of the present invention said wall member is formed from a magnet and said holding part is in the different magnetic pole from the attraction side and the other above tip face. This constitution can hold the central part side of a compact disc in the state that overturned between two magnet members. Moreover, both of the compact disc holder that is shown in said third and the fourth development art, that can mount a compact disc by magnetic attraction in succession a lot. Therefore the compact disc holder can adsorb at an arbitrary place of ferromagnetic material by magnetic force without a particular storing container in this state and can minimize installation space.

A compact disc holder of the fifth embodiment of the present invention said wall member is formed from magnet member of same material as said compact disc holder of the second embodiment. This compact disc holder constitutes of only one part for a compact disc, so it is easy to work for mounting, and an economic advantage occurs.

A compact disc holder of the sixth embodiment of the present invention, the outside of said side wall member or the outside of said wall member has formed to a shape of about arc curve and is to be able to rotate at least when adsorbs to flat surface of ferromagnetic material. By this constitution, it is easy to look for a desired compact disc, because they are free to open between plural compact discs each other, and work characteristics are very good because they automatically return to an original state if remove power to open.

A compact disc holder of the seventh embodiment of the present invention,

said compact disc holder comprises said side wall member is formed from housing cover that can store a compact disc, and said holding part is made from magnet member that is attached to a center of the housing cover, and adsorbs to ferromagnetic material include the cover. This constitution can prevent a compact disc from dust. And, it can simplify structure because it constitutes to install said magnet member in the center of a housing cover.

A compact disc holder of the eighth embodiment of the present invention, comprises said housing cover that store a compact disc and said magnetic member that is connected by coupling material, and adsorb to ferromagnetic article by magnetic attraction force of said holding part through said housing cover and said coupling material. It can increase the degree of freedom of a search more, if hold a compact disc through the housing cover and the coupling material by adsorption of the magnetic member by magnetic attraction.

A compact disc holder of the ninth embodiment of the present invention said housing cover is formed from a soft transparent material. By this constitution, the compact disc holder can see a display of a compact disc directly.

As for this invention, because of using a magnet member, when put the plural compact disc holders 1 that are connected (cf. Fig. 29) and when mount the compact disc holders that connected the plural number by magnetic attraction in a ferromagnetic article (cf. Fig. 30), flux goes from a north magnetic pole to a south magnetic pole as shown in a dashed line in Fig. 29 and 30, and magnetic flux external leakage occurs. A place is thought where flux leakage influences, for example, in a case a compact disc holder is installed in a personal computer neighborhood where one operates a

personal computer inputs data from a compact disc, a floppy disc is necessary considered thing which be hard to receive a magnetic obstacle even if it touches or approaches work desks in work to copy data in a floppy disc.

A compact disc holder of the tenth embodiment of the present invention, wherein either one among said compact disc holder through from said second embodiment to the ninth embodiment, subsidiary magnet either adsorb to said compact disc holder or put among plural said compact disc holders.

Putting a magnet in series on magnetized direction increase of attraction force of a magnet grows big to some thickness is characteristic. Using the characteristic, and the compact disc holder reduces possibility of a magnetic obstacle by a magnet that comparatively has weak magnetic force. Particularly, to assist attraction force in case of a little number of the connections, as show in Fig. 32, put subsidiary magnet 139 among ferromagnetic article S8 and the compact disc holder which are adsorptive substance and fixed. Furthermore, when use the compact disc holder in the state that does not adsorb it adsorptive substance, by adsorbing subsidiary magnet 139 to the compact disc holder 1 can increase attraction force of the compact disc holder.

A compact disc holder of the eleventh embodiment of the present invention, said magnet member is made from ferrite-bond magnet of comparatively weak magnetic force than a magnet of the other kind. By this constitution, the compact disc holder reduces possibility of a magnetic obstacle to a floppy disc and makes easy to form magnetic field even if complicated shape.

A support base of said compact disc holder of the twelfth embodiment of the present invention, comprises ferromagnetic material, and which sets

said compact disc holder which is comprising the magnet member that is forming a face shape magnet that has one face at the north magnetic pole and on opposite side at the south magnetic pole by magnetic attraction to inside its, and adsorbs ferromagnetic connecting material between the last end of compact disc holders and bottom of the support base and forms a magnetic closed circuit, and prevents the flux external leakage.

The support base of the present invention uses support member 140 that is made from ferromagnetic article sets the compact disc holders 1 that is holding a compact disc 5 to it by the magnetic attraction force, as shown in Figure 31. The support member 140 has magnet member that is each side magnetized in thickness direction (one side has magnetic north pole / the opposite side has magnetic south poles in a thickness direction), the magnet member sets the compact disc holder 1 that is holding compact disc to the inside of this support member 140 by magnetic attraction. Furthermore, the support member 140 adheres a coupling plate 142 that is made from a ferromagnetic material between a last part of the compact disc holder 1 and a support member bottom 141. This constitution forms a magnetic closed circuit and prevents magnetic flux to leak out to the outside and can apply it when uses subsidiary magnet 139 for assist attraction force as shown in Fig. 33.

A thirteenth embodiment of the present invention, said support base has said magnet member that is made from each side multi poles magnetized in thickness direction, and the support base sets the compact disc holder with the magnet member to the inside of the support member by magnetic attraction, and adheres the magnetic coupling plate to the most rear compact disc holder by the magnetic attraction, and formed a magnetic

closed circuit, and prevented external leakage of magnetic flux.

The support base of the present invention uses support member 140 that is made from a ferromagnetic material that adheres compact disc holders 1 to its inside by the magnetic attraction force that is holding compact disc 5 as shown in Fig. 36. The support member 140 has magnet member inside of it, the magnet member is formed to face multi poles magnetized type that is magnetized to vertical direction (one side has a number of magnetic poles / other one side has a number of magnetic poles in a thickness direction). Furthermore, a coupling plate 142 made from ferromagnetic article adsorbs between last part of the compact disc holders 1 and forms a magnetic closed circuit by this, and prevents a magnetic flux external leakage.

As magnet member to use this invention are, for example, permanent magnet like ferrite magnet such as strontium ferrite, barium ferrite, and rare earths magnet such as neodymium-iron-boron, samarium-cobalt, samarium-iron-nitrogen, manganese-aluminum magnet and these bond magnets (a plastic magnet, a rubber magnet), and etc. Especially, because bond magnet is comparatively weak magnetic force, possibility to wake up a magnetic obstacle to floppy discs is low, and, as for the ferrite bond magnet is desirable, because there is a good point to be able to be superior to molding characteristics and it is an oxide form and coercive force is big and stable and can be superior to economy.

As the examples of the magnet pattern for a magnet member to be use in the present invention, each side magnetized in thickness direction (one side (b) has north magnetic pole / other one side(c) has south magnetic poles in a thickness direction), as shown in Fig. 39, and each side multi poles magnetized in thickness direction as shown in Fig. 37 and in Fig.

38 (cf. (b) (c) of the state that of two magnetic poles or four magnetic poles on each face of a thickness direction).

An each side magnetized in thickness direction article is good in centripetal tendency attraction characteristics when match the center and in turn characteristics when turn compact disc holder. Furthermore, an attraction force fall by coherence characteristics fall of attraction side does not occur is advantageous if formed curve to a outside face of a side wall or a wall member of compact disc holder, otherwise it is possible to direct and magnetize at same time in a magnetic field when molds a bond magnet of anisotropy in a magnetic field is other than a few advantages. But there are the weak points that attraction force compares with each side multi poles magnetized in thickness direction article is weak, and external leakage of magnetic flux extends to far distance.

An each side multi poles magnetized in thickness direction article because distance of a south magnet pole is near to a north magnet pole, a magnetic flux external leakage does not extend far, and, as for, coherence attraction is big, and centripetal tendency characteristics, turn characteristics are good, but it is inferior in attraction of curve side, and, in addition, as for magnetization, others to do after molding are difficult.

Therefore, about a magnetic pattern, it should be decide by the field of use compact disc holder.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1(a) is a perspective view showing a compact disc holder according to an embodiment of the present invention.

Fig. 1(b) is section taken along the line B-B of Fig. 1(a).

Fig. 2(a) is a perspective view showing a using method of a compact disc holder according to the first embodiment of the present invention, Fig. 2 (b) is section taken along the line B-B of Fig. 2(a).

Fig. 3 (a), Fig. 3(b), Fig. 3(c) are views to explain the compact disc holder according to the second embodiment of the present invention, Fig. 3(a) is a perspective view showing a procedure of installation, Fig. 3(b) is section taken along the line C-C of Fig. 3(a), Fig. 3(c) is front elevation when mount compact discs in the state that are connecting to a ferromagnetic article.

Fig. 4 is a front elevation showing an opening state of the compact discs under connecting in the second embodiment of the present invention.

Figure 5 is a front elevation showing a mounting the compact disc of a connection state in the second embodiment of the present invention.

Figure 6(a), Fig. 6(b), Fig. 6(c) are views to explain the compact disc holder according to the third embodiment of the present invention, Fig. 6(a) is a front elevation of the compact disc, Fig. 6(b) is front elevation to explain a holding state of a the compact disc, Fig. 6(c) is front elevation when mount the compact discs that are connecting plural numbers to a ferromagnetic article.

Fig. 7(a), Fig. 7(b), Fig. 7(c) are views to explain a transformation of the compact disc holder according to the third embodiment of the present invention, Fig. 7(a) is a front elevation of the compact disc holder, Fig. 7(b) is a front elevation of the compact disc holder that are connecting mount to a ferromagnetic article.

Fig. 8 is a cross sectional view of the compact disc holder of another

transformation of the third embodiment of the present invention.

Fig. 9 is a cross sectional view of a further another transformation of the compact disc holder of the third embodiment of the present invention.

Fig. 10(a), Fig. 10(b) are drawings to explain the compact disc holder according to another embodiment of the transformation of the second and the third embodiment of the present invention, Fig. 10(a) is a cross sectional view applied to the second embodiment, Fig. 10(b) is a cross sectional view applied to the transformation of the third embodiment of the present invention.

Fig. 11 is a front elevation to explain using a protecting cover to the second embodiment of the present invention.

Fig. 12(a), Fig. 12(b), Fig. 12(c) are perspective views to explain the fourth embodiment of the present invention, Fig. 12(a) is a perspective view showing a compact disc, Fig. 12(b) is a perspective view showing a compact disc holder, Fig. 12(c) is a perspective view showing a compact disc holder that is housing a compact disc.

Fig. 13 is a section view taken along the line D-D of Fig. 12(b).

Fig. 14 is a central longitudinal section in Fig. 12 (c).

Fig. 15 is a cross sectional view of the compact disc holder according to the third embodiment of the present invention showing the compact disc holders that are connecting plural numbers mount to a ferromagnetic article.

Fig. 16(a), Fig. 16(b), Fig. 16(c) are perspective views to explain the compact disc holder according to the fifth embodiment of the present invention, Fig. 16(a) is a perspective view showing a compact disc holder, Fig. 16(b) is a perspective view showing a compact disc holder that is

holding a compact disc, Fig. 16(c) is a perspective view showing a compact disc holder that is storing a compact disc.

Fig. 17 is a section view taken along the line E-E of Fig. 16 (a).

Fig. 18(a), Fig. 18 (b), Fig. 18 (c) are section views to explain the compact disc holder that is storing a compact disc of the fifth embodiment of the present invention, Fig. 18 (a) is a longitudinal section of Fig. 16 (c), Fig. 18 (b) is a sectional view of showing the compact disc holders that are connecting a lot of and mount to a ferromagnetic article.

Fig. 19(a), Fig. 19(b), Fig. 19(c) are perspective view to explain the compact disc holder according to the sixth embodiment of the present invention, Fig. 19(a) is a perspective view showing a compact disc, Fig. 19(b) is a perspective view showing a compact disc holder, Fig. 19(c) is a perspective view showing a compact disc holder that is storing a compact disc.

Fig. 20 is a section view taken along the line F-F of Fig. 19 (b).

Fig. 21 is a central longitudinal section view of Fig. 19 (c).

Fig. 22 is a longitudinal section to explain the connected plural compact disc holder of the sixth embodiment of the present invention that are mounting to a ferromagnetic article.

Fig. 23 is a perspective view showing disc holder of a transformation of according to the sixth embodiment of the present invention.

Fig. 24 is a cross sectional view taken along the line G-G of Fig. 23.

Fig. 25 is a perspective view showing the seventh embodiment of the present invention.

Fig. 26 is a cross sectional view taken along the line H-H of Fig. 25.

Fig. 27 is cross sectional view showing a magnet member of the seventh

embodiment, Fig. 27(a) is a cross sectional view taken along the line J-J of Fig. 26, Fig. 27(b) is a cross sectional view taken along the line K-K of Fig. 27(a).

Fig. 28 is a cross sectional view showing connected plural compact disc holders of the seventh embodiment of the present invention that are mounting to a ferromagnetic article.

Fig. 29 is a front elevation view showing an outline of a general idea of external leakage of magnetic flux when mount a compact disc in the state connecting plural compact disc holders of the second embodiment of the present invention.

Fig. 30 is a front elevation view showing an outline of a general idea of the external leakage of magnetic flux when mount the compact disc holder of the second embodiment of the present invention in the state connecting plural compact disc holders to a ferromagnetic article.

Fig. 31 is a front elevation view showing an outline of a general idea of the fifteenth embodiment of the present invention.

Fig. 32 is a front elevation view showing the thirteenth embodiment of the present invention.

Fig. 33 is a front elevation view showing an embodiment comprising the thirteenth and fifteenth embodiment of the present invention.

Fig. 34(a) is a front elevation view showing one example of the magnetic pattern that face multi poles magnetized type of both side and stored a compact disc with a couple of compact disc holders and Fig. 34 (b) is the right side view of the compact disc holder.

Fig. 35 is a front elevation view showing an outline of a general idea of external leakage of magnetic flux from the both ends when the compact

disc holder of the present invention with a magnet member having that each side magnetized in thickness direction as shown in Fig. 37 that are connecting a lot of.

Fig. 36 is a front elevation view showing an outline of a general idea of a magnetic closed circuit of the sixteenth embodiment of the present invention.

Fig. 37(a) is a front elevation view showing one example of face multi poles magnetized pattern on both side (2 poles) in the concentric circle magnetic pole pattern, Fig. 37(b) is a left side elevation view showing of the Fig. 37(a) example, Fig. 37(c) is a right side elevation view showing of the Fig. 37(a) example.

Fig. 38 (a) is a front elevation view showing another example of a face multi poles magnetized type on both side that a circle divide in to the four magnetic poles arc-shaped, Fig. 38(b) is a left side elevation view showing of the Fig. 38(a) example, Fig. 38(c) is a right side elevation view showing of the Fig. 38(a).

Fig. 39 (a) is a front elevation view showing an example of face magnetized type on both side of the present invention, Fig. 39(b) is a left side elevation view showing of the Fig. 39(a) example, Fig. 39(c) is a right side elevation view showing of the Fig. 39(a).

THE BEST MODE OF THE INVENTION

The present invention is to hold a compact disc by compact disc holder using a magnet member, and to connect compact disc holders by magnetic force of each magnet member, and it will be explain based on following embodiment more.

Fig. 1 is the first example of the present invention. As for the compact disc holder 1 in this example, as shown in Fig. 1 (a) and Fig. 1 (b), magnet member 2 constitutes one piece of article. In central part of the magnet member 2, holding part 3 is formed to insert through central hole 6 of a compact disc 5, and, in backward of it a sidewall part 4 that covers central part of compact disc 5 is formed.

Moreover, the holding part 3 and the sidewall part 4 are illustrated as if like column in these drawings, but is good with arbitrary shape such as a polygon or an oval. A magnetic polarity of magnet member 2 to be different in tip face 3a of holding part 3 from in outside 4a of above side wall part 4, and magnetic attraction of each to ferromagnetic article is enabled.

If, curve part 4b were formed in outside 4a of sidewall part 4, it is easy to operation of its rotation as to mention later.

Fig. 2(a), Fig. 2(b) show using example of the first example of the present invention. As showing in Fig. 2(a), in the state that holding part 3 of magnet member 2 insert through a central hole 6 of the compact disc 5, and adsorb the tip face 3a of the holding part 3 to a position B0 of ferromagnetic article S1 such as an iron shelf by magnetic attraction, as showing in the Fig. 2(b), the compact disc 5 is held between side wall part 4 of magnet member 2 and ferromagnetic article S1.

Fig. 3(a) and Fig. 3(b) show the second example of the present invention. In this example, a ferromagnetic article that adsorbs magnet member 2 that is made from like the first example, the compact disc holder 21 comprises two pieces of magnet member 2 and magnet member 22, the magnet member 22 is formed as same shape as the magnet member 2 with a holding part 23 and

a sidewall part 24 that they are magnetized in different magnetic pole from that of the holding part 3 and the sidewall part 4, as shown in Fig. 3(a) the holding part 3 of the magnet member 2 and the holding part 23 of the magnet member 22 insert through central hole 6 of a compact disc 5, and mount the compact disc 5 by magnetic attraction.

Moreover, above holding part 3, 23 is slightly bigger than thickness of compact disc 5 in total height is desirable for hold space, and the height seems to be not necessary always equal the example, it may concentrate on only one side.

And it can install a compact disc to an arbitrary place on ferromagnetic article S2 such as an iron shelf adsorb by magnetic attraction in above state in a sidewall part in one magnetic substance (cf. C-C section of Fig. 3(b) in adsorption position C0).

Moreover, if made plural units that are holding a compact disc 5 between the magnet member 2 and 22 of the example compact disc holder 21, plural compact disc holders can adsorb to sidewall part of the other magnet member sequentially in order, as showing in Fig. 3 (c), it can install the plural number connected compact discs 5. In this case an installing place is arbitrary and is useful in holding space to be able to use useless space.

Furthermore, magnetic attraction force acts even if open between compact disc holders to look for the desired compact disc from connected plural compact discs as shown in Fig. 4, and it is convenient because of restoring to an original connection state if remove opening force.

Moreover, sidewall part 4 of magnet member 2 can operate in the example more smoothly when opened between the compact discs mentioned above so curve part 4b is formed that could pivot a magnet member itself.

In this example, when plural compact discs are connected, as shown in Fig. 5 it can store a connection state itself so it is possible to store them by mounting surface without a ferromagnetic article in around.

Fig. 6(a) and Fig. 6(b) show the third example of the present invention. In this example it is similar to the second example as to hold a compact disc between magnet members, but differs in a point to use single type magnet member.

As shown in Fig. 6(a), a compact disc holder 31 is formed single magnet member 32, and right holding part 38 and left holding part 39 that insert to a central hole of a compact disc are disposed each side in central part of both sides of a disc like a wall part 37. Total height of both the right holding part 38 and the left holding part 39 is slightly bigger than thickness of a compact disc, though each height of them is equal in this example. And each end face 38a of the right holding part 38 and end face 39a of the left holding part 39 is magnetized in different magnetic polarity.

As shown in Fig. 6(b), to hold a compact disc, in the state that insert the right holding part 38 of the compact disc holder through central hole 6 of compact disc 5, and adsorb left holding part 39' of the another compact disc holder 31' to it.

And as shown in Fig. 6(c) the compact disc holder 31 can connect plural compact discs as same operation as mentioned above and adsorb them to a ferromagnetic article S3 by magnetic attraction and can hold them.

Fig. 7(a) and Fig. 7(b) show transformation of the third example of the present invention.

A compact disc holder of the third example of the present invention

is symmetric, so a look is good, on the other hand because difference of polarity in both ends aspect is incomprehensible, discloses the structure that shape identification is easy to recognize in a transformation.

A compact disc holder 41 comprises one piece of magnet member 42, and holding part 43 is formed to slightly bigger than thickness of a compact disc in central part of one side of sidewall part 44, as shown in Fig. 7 (a) and magnetized to different the magnetic polarity of the tip face of a holding part from a sidewall outside. (Therefore constitution of the compact disc holder of the third example of the present invention is basically same as the compact disc holder 1 of the first example of the present invention). According to the compact disc holder 41, holding operation of a compact disc becomes simple because of being able to distinguish a difference of polarity by a difference of shape. And it can hold after plural compact discs connected and adsorb to ferromagnetic article S4 as shown in Fig. 7 (b).

Moreover, for the shape that it is easy to distinguish, holding part 53 of a compact disc holder 51 forms wider than said examples of the transformation and makes depression 53a in an opposite side of the holding part 53 as shown in Fig. 8, and forms convex 67 such as a sphere on one side of a compact disc holder 61 and concave 68 in an opposite side as shown in Fig. 9, and may adopt appropriate structure.

The each compact disc holder holds a compact disc between magnetic members in the first example and the second example and the transformation of the third example, but one member may merely form from ferromagnetic materials as shows in Fig. 10(a) and Fig. 10(b).

A compact disc holder 71 as shown in Fig. 10(a) comprises of magnet

member 72 with wider shape holding part 73 than that of the transformation of the second example and wall member 77 of ferromagnetic article that is formed from like a steel plate. Fig. 10(b) shows using wall member 78 of the ferromagnetic article that is formed from steel plate to the same shape of the compact disc holder 51 shown in Fig. 8. In these drawings reference numeral 5 is a compact disc.

Moreover, in said each example and the transformation explanation is done about a compact disc in a bare state, but it can similarly carry out, even if compact disc is stored in a protection housing cover 7 as shown in Fig. 11. This drawing shows the state that is holding compact disc 5 between magnet material 2 and 22 of the second example.

In the present invention it is possible to hold a compact disc beside a structure to use a magnet member directly as explained said, and it will be explained with following example.

From Fig. 12 to through Fig. 15 shows the fourth example of the present invention. A compact disc holder 101 is used for this example, comprising a housing cover 102 that stores compact disc 5 and magnetic member 103 in it.

The housing cover 102 is made from a transparent resin sheet into a bag with back side 104 and front side 105, and is formed a storing region 106 of compact disc 5 as shown in Fig. 12 (b) and Fig. 13 that is the taken along the line D-D of Fig. 12 (b), and a magnet member 103 is set, in the condition that central hole 6 of the compact disc 5 as shown in Fig. 12 (a) is able to insert into internal central part in this back side 104, that is covered with sheet member 109 on both sides and at its around is adhered by melting adhesion.

Moreover, a setting structure of magnet member 103 is good by an appropriate method except this example. Furthermore, flap part 107 is formed in the upper part of backside 104, and possess the upper part of front side 105, and stopping band 108 is installed.

And storing of above compact disc 5 completes after it is posted at an appointed position of above storing region 106 by inserting above flap part 107 into above strip 108 (cf. Fig. 12 (c) and Fig. 14).

Because compact disc holder 101 are possible to adsorb by magnetic attraction with a ferromagnetic material and other compact disc holder 101 as shown in Fig. 15, the compact disc holder 101 that is storing compact disc 5 and can mount to ferromagnetic article S4 in the state that connecting the plural compact disc holders 101.

From Fig. 16 through Fig. 18 shows the fifth example of the present invention. A compact disc holder 111 comprising a housing cover 112 that can store a compact disc and two magnet members 113a, 113b.

The housing cover 112 is made from a transparent resin sheet into a bag with back side 114 and front side 115, and is formed a storing region 116 to store a compact disc 5, and internal central part in this back side 114 a magnet member 113a is installed to insert central hole 6 of the compact disc 5, and a flap part 117 is formed in the upper part of back side 114, and a magnet member 113b is installed at the upper end part of the back side 114 to be able to adsorb with magnet member 113a by magnetic attraction. Sheet members 119, 119 that cover and mount magnet member 113a and 113b by melting adhesion are installed outside of backside 114 in this example as shows in Fig. 17. But the mounting method of the mount magnet member 113a and 113b is not limited to the above one and may adopt appropriate

structure.

Moreover, notch part 115a is formed so that the above magnet member 113a part exposes out in the upper part of above front side 115.

And storing of a compact disc completes by adsorbing the magnet member 113b that is installed by bending above flap part 117 downward to another magnet member 113a that is installed at one side in the state that compact disc 5 is stored at an appointed position as shown in Fig. 16 (b). (Cf. Fig. 16 (c) and Fig. 18 (a)). As shown in Fig. 16 (a) and Fig. 17, if made a dent 114a it is easy to bend above flap part 117 and is convenient.

In said state that the compact disc holder 111 is storing a compact disc similar to the fourth example, it is enabled to connect with the other compact disc holders 111 and adsorption by magnetic attraction to ferromagnetic article S5 as shown in Fig. 18 (b). In this example, compare with the fourth example there is advantageous storing a compact disc is easy.

From Fig. 19 through Fig. 22 show the sixth example of the present invention. A compact disc holder 121 of the present invention outline comprises housing cover 122 and magnet member 123, and is different from said example of the fourth and the fifth in the point where an installation position of the magnet member 123 comes off from the housing cover 122 as shown in Fig. 19 (b) and Fig. 20 that is the cross section taken along the line F-F of Fig. 19 (b).

Above housing cover 122 is formed a storing region 126 of a compact disc between back side 124 and front side 125, and flap part 127 is installed in the upper part of the back side 124 by melting adhesion, And a stopping band 128 is installed by melting adhesion in the upper part of the front

side 125 which is inserted the flap part 127 to stop it.

The magnet member 123 is mounted in the upper part of backside 124 by installing between the upper part of backside 124 and the flap part 127. On that occasion so that magnet member 123 is located centrally as shown in Fig. 19 (b) and (c), in this storing space may install unevenness to maximize central storing space and to definite a putting position for the storing compact disc that does not illustrate. Moreover, thickness of the magnet member 123 is set top face position of the flap 127 when housing the following compact disc 5 and covering up the magnet member 123 does not become low from the top face of the stopping band 128.

In this state the compact disc 5 that is shown in Fig. 19 (a) is inserted in the storing region 126 that is shown in Fig. 19 (b) of the housing cover 122, and it is stored in the compact disc holder 121 by the flap part 127 being inserted in stopping band 128(cf. Fig. 19 (c) and Fig. 21).

And a lot of the compact disc holders 121 are connected with magnetic attraction force of their each magnet member 123 like as shown in Fig. 22, and they are mounted by magnetic attraction to ferromagnetic article S6.

The compact disc holders 121 can open widely when one look for a desired compact disc so that a position of the magnet member 123 is separated from the storing region 126 in this example, and there are advantages in that it is easy to watch it.

Furthermore, it becomes more easy to open more if install the magnet member 123 on the top of extension region 129 of narrow widths it seems to be the transformation of this example as shown in Fig. 23 and Fig. 24 that are the cross section taken along the line G-G of Fig. 23.

A projection 130 is to project a magnet and to adsorb to other compact

disc holder easily by magnetic attraction, and can apply it to each example shown in Fig. 19 to Fig. 22.

Fig. 25 through Fig. 28 shows the seventh example of the present invention.

A compact disc holder 131 comprises from housing cover 132 storing an compact disc in and magnet member 133 and connecting member 134; and an extension region 129 in this example made from the other member that is different from said extension region 129 (cf. Fig. 23) in the transformation of the sixth example as shown in Fig. 25 and Fig. 26 is the cross section taken along the line H-H of Fig. 25.

A hole 145 is made at the upper part of above housing cover 132, and a connecting member 134 that is made from resin fiber to a string shape and is pierced through the hole 145. The connecting member 134 is formed to about circle, and an end of it is inserted in a magnet cover 135 that is molded to rather thin thickness from like resin in the magnet member 133, and it is hung to the projection 136 as shown in Fig. 27(a) that is cross section taken along the line J-J of Fig. 26 and in Fig. 27(b) that is cross section taken along the line K-K of Fig. 27(a), and is stopping through a magnet body 137 by mounting a cover board 138 compulsively.

Moreover, about installation structure of above connecting member 134 and the magnet member 133 and structure of the magnet member 133 they may be carry it out by appropriate structure without limiting to above examples.

The compact disc holder 131 that comprises as above, a connection with other plural number compact disc holders 131 and mount to ferromagnetic article S7 are enabled by magnetic adsorption of magnet member 133 as shown

in Fig. 28. According to this example, when one looks for a desired compact disc one can open greatly, and can watch it easily even if one turn it because it is all right.

The following examples show about product methods of the compact disc holders and various its performances.

(Example 8)

This example was measured magnetic attraction force of a compact disc holder.

A compact disc holder used for this measurement with shape shown in Fig. 1, that was a diameter of sidewall part 4 of 25mm, a diameter of holding part 3 of 14.8mm and thickness of it of 2.1mm (one piece), and was molded by well known ejection molding from marketing a bond magnet (a plastic magnet) pellet made up raw materials for plastic magnet like anisotropy strontium ferrite powder and polyamide resin (magnetic characteristic Br: 2580G, bHc:23600e, iHc:28000e, Bhmax:1.6MG0e) (say sample 1 in following).

And a subsidiary magnet that assists an attraction force was cylindrical, and it was a diameter of 14.8mm, thickness of 7.8mm, and it was molded as the compact disc holder was mentioned above. As for magnetization of above both materials were magnetized both side in the magnetic direction field at the same time of magnetic field molding. (Molding of a counterpart as a pair of compact disc holder reversed a direction of a magnetic field and molded it.)

The compact disc holder and the subsidiary magnet which were produced by above example 8 when adhered to a steel plate (thickness 1.5mm) as adsorbent, attraction force was 85g only in the case of the compact disc holder and it was 170g when adsorbed the compact disc holder by the

subsidiary magnet 139 to assist magnetic adsorption as shows in Fig. 32, and the former one felt even a hand sense with lack of attraction force, but, as for the latter one, the enough touch was gotten.

If attraction force in case of one pair was enough, there are no problems because of the attraction force was an increase tendency by a connecting more than it.

(Example 9)

This example was measured external leakage magnetic flux of compact disc holders.

Compact disc holder used for this measurement were above sample 1 and sample 2 that was molded by well known ejection molding from marketing a bond magnet (a plastic magnet) pellet (magnetic characteristic Br: 4600G, bHc:43000e, iHc:140000e, Bhmax:5MG0e) like isotropy neodymium /iron / boron bond magnet and formed to the same shape and size of the sample 1 and magnetized it by loading magnetic field of 250000e from both direction of top and bottom side.

And measurement of surface leakage magnetic flux density was done by using a gauss meter at the end center of 24 pieces of the compact disc holders of states that were connected of each sample. It resulted in the sample 1 of anisotropy strontium ferrite bond magnet was weak with 872G compare with 1950G in the case of sample 2 of isotropy neodymium /iron / boron bond magnet.

Therefore, it can reduce possibility of a magnetic obstacle to floppy discs if a ferrite bond magnet used for the compact disc holder and is suitable because this magnet compare with a magnet of the other kind even complicated shape can mold easily in magnetic field and was inexpensive.

(Example 10)

In this example leakage magnetic flux density from a support base was measured when the support base was used in the state that used the compact disc holders that were magnetized on both sides.

The compact disc holders of above example 1 were used in this measurement.

The measurement result of surface magnetic flux density of the last holder central part with the state that connected 24 pieces of compact disc holders adhered to an iron plate of thickness 1.5mm was 920G. On the other hand, when making a magnetic closed circuit with the state that connected 24 pieces of the compact disc holders adhered between a support member 140 (made from iron plate of thickness 1.5mm, width 50mm) and coupling iron plate of thickness 1.5mm, and measured leakage flux density in a back center of the iron plate by a gauss meter was about 2G, from its result leakage magnetic flux become a lower than the case there were no coupling iron plate.

(Example 11)

In this example leakage flux density from a support base was measured when the support base was used in the state that used the compact disc holders that were magnetized in two magnetic poles on both sides.

The compact disc holders used in this measurement were formed as the example 8, after reduced magnetic force by well known magnetic reverse load method and same as the compact disc holder of example 8 as shown in Fig. 34 (a) and (b), and two magnetizing yokes of a diameter of 10mm of center pole that had an North magnetic pole up side and a South magnetic pole down side closely connected to the compact disc holder both faces a concentric circle in, and loaded a pulse direct current of 1500A by well-known magnetizing

electric supply equipment.

The measurement result of surface flux density of the central last holder part with the state that connected 24 pieces of compact disc holders adhered to an iron plate of thickness 1.5mm was 870G. On the other hand, when making a magnetic closed circuit with the state that connected 24 pieces of the compact disc holder adhered to a support member 140 (made from iron plate of thickness 1.5mm, width 50mm) and adhered the coupling iron plate of thickness 1.5mm to the last compact disc holder as shown in Fig. 36, and measured leakage flux density in a back center of the iron plate by a gauss meter was about 0G, from these result a leakage flux did not recognize.

INDUSTIAL AVAILABILITY

The present invention can mount compact disc to a compact disc holder using magnet member, so that can connect plural compact discs by magnetic adsorption it is simple structure and high serviceability and excellent economy, and because the compact disc holder can mount to an arbitrary place in a ferromagnetic article such as an iron shelf, it can utilize useless space and can save the installation space.

Furthermore, according to this invention, if on the occasion of use in cases of work of a personal computer with possibility to approach a floppy disc, you can use a bond magnet of low magnetic force by combination of an adsorption assistance magnet and can prevent leakage magnetic flux by using the support base of compact disc holder to form a magnetic closed circuit.